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천무 7-28
2/11

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

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By Express Mail
No. EV608568448US

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year) 16 JULY 2004 (16.07.2004)

Applicant's or agent's file reference

PAPARA04534

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/KR2004/000492

International filing date (day/month/year)

10 MARCH 2004 (10.03.2004)

Priority date(day/month/year)

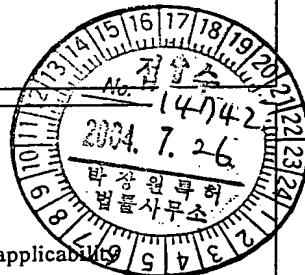
10 MARCH 2003 (10.03.2003)

International Patent Classification (IPC) or both national classification and IPC

IPC7 A62C 37/08

Applicant

PARADISE INDUSTRY CO.,LTD. et al



1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
 Box No. II Priority
 Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 Box No. IV Lack of unity of invention
 Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 Box No. VI Certain documents cited
 Box No. VII Certain defects in the international application
 Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/KR2004/000492

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- a sequence listing
 table(s) related to the sequence listing

b. format of material

- in written format
 in computer readable form

c. time of filing/furnishing

- contained in the international application as filed.
 filed together with the international application in computer readable form.
 furnished subsequently to this Authority for the purposes of search.

3. In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE
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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1 - 19	YES
	Claims		NO
Inventive step (IS)	Claims	1 - 19	YES
	Claims		NO
Industrial applicability (IA)	Claims	1 - 19	YES
	Claims		NO

2. Citations and explanations :

Cited Documents:

- D1: JP 08131575 (28 May 1996)
- D2: US 6082463 (04 July 2000)
- D3: JP 13161852 (19 June 2001)
- D3: JP 07231949 (05 September 1995)

Claims 1-19 of the present invention relates to a sprinkler head comprising: a locking unit locked inside a second housing for maintaining a sealing state between a deflector and a first housing; a heat responding unit exposed to outside of a ceiling for releasing the locked state of the locking unit by reacting to a fire when the fire breaks out; and a head cover mountain at a lower side of the heat responding unit with a certain interval for covering the heat responding unit not to be exposed to outside and transmitting heat to the heat responding unit after collecting heat at the time of a fire occurrence. The sprinkler head of claims 1-9 has a nice look, and the head cover performs a heat collecting function at the time of a fire occurrence thus to have a fast reaction speed, thereby enhancing a function of the sprinkler head.

D1 relates to sprinkler head comprising a cylindrical frame having a step part on the lower part of an inner peripheral surface, a disassemble part supporting a cylinder slidably arranged in the frame, and a plurality of ball insertion holes on the side wall, and a plurality of lock balls projecting from the ball insertion holes of the disassemble part supporting cylinder and for preventing the disassemble part supporting cylinder from being separated from the frame. Moreover, a disassemble part presser slidably arranged in the disassemble part supporting cylinder and for holding the state where the lock balls project from the ball insertion holes of the disassemble part supporting cylinder and a fusible alloy provided under the disassemble part presser, and to be fused by heat in case of fire.

(Continued on Supplemental Sheet.)

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of :

Box V.

D2 relates to a concealed extended coverage quick response sprinkler having a sprinkler body with an axial passage for water, a cap normally closing the axial passage, and a thermally responsive structure supported from a pair of frame arms retaining the cap in position. A deflector slidably supported from the sprinkler body includes a substantially planar imperforate plate with opposed peripheral edge portions disposed on opposite sides of a plane containing the frame arms which are bent away from the sprinkler body. The sprinkler has a K factor of about 11.4 and provides quick response for light hazards at spacings up to 18 feet and standard response for light hazards at spacings of 20 feet.

D3 relates to a protective cap for a sprinkler head, which is detachably fitted on an embedded type sprinkler head which has a heat-sensitive actuating section, or the like, on the head body. In such a protective cap, a drain hole 11 for water draining is provided on the bottom surface of the protective cap which is formed into a cylindrical shape having a bottom. Also, a shielding plate is provided at an area on the bottom surface of the protective cap and around the drain hole and provided on the inner peripheral side of the drain hole, and a roof section is provided on the shielding plate.

D4 relates to a flashing sprinkler head, wherein a frame is equipped with a cylindrical cover to conceal and protect a heat sensitive decomposition part and a plurality of disc-shaped heat collection plates and heat collection plates are set at the lower end of the heat sensitive decomposition part. An inflow part of a heat current which is formed on the lower side of the cover has a gap between the cover and the heat collection plates and numerous holes drilled at a lower part of the heat collection plates.

I. Novelty

D3 is the closest prior art but does not disclose the sprinkler head of the present invention comprising first and second housings connected to a pipe for water supply, a deflector, and a locking unit. Therefore, the present application meets the requirement of novelty set forth in PCT Article 33(2).

II. Inventive step

None of the documents D1-D4 disclose the components of the sprinkler head comprising first and second housings connected to a pipe for water supply, a deflector for diffusing water, a locking unit for maintaining a sealing state and a heat responding unit having a fuse metal, and the effect for rapidly putting out a fire by increasing the reaction speed by the head cover which transmits heat to the heat responding unit at the time of a fire occurrence, and the effect for giving the interior a nice look. Therefore, the present application meets the requirement of inventive step set forth in PCT Article 33(3).